



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/645,999

08/21/2003

Mark McDowell

LEW 17, 484-1

8671

26311

7590

02/06/2006

NASA GLENN RESEARCH CENTER  
21000 BROOKPARK ROAD  
OFFICE OF CHIEF COUNSEL; MAIL STOP 500-118  
CLEVELAND, OH 44135

EXAMINER

PRITCHETT, JOSHUA L

ART UNIT

PAPER NUMBER

2872

DATE MAILED: 02/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/645,999	Applicant(s) MCDOWELL, MARK	
	Examiner Joshua L. Pritchett	Art Unit 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 05 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-5, 7-14 and 16-33 is/are pending in the application.
- 4a) Of the above claim(s) 27-32 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-14, 16-26 and 33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

This action is in response to Amendment after non-final rejection filed December 5, 2005. All applicant's arguments have been considered.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3-5, 7-10, 12-14, 16-18 and 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greenwald (US 6,330,106) in view of Hemstreet (US 5,733,721).

Regarding claims 1, 10 and 18, Greenwald teaches a machine vision system comprising a video microscope (Fig. 1) comprising a holder (10) for specimens (34) and a camera located so as to be focused on the holder (col. 6 lines 1-13), a light source operatively connected to the video microscope (col. 4 lines 44-45), a robotic system operatively connected to and for positioning the video microscope (col. 6 lines 15-25), and a computer operatively connected to both the camera and the robotic system (Fig. 1; col. 6 lines 4-9) the computer having operating programs comprising machine vision techniques for autonomous scanning (col. 6 lines 5-10) and

Art Unit: 2872

detecting (col. 5 lines 9-11) features of the specimen. Greenwald teaches saving images collected from viewing the specimen (col. 6 lines 5-10) along with the location of the images (col. 6 lines 5-10) the machine vision techniques include routines that operatively control the robotic system (64). The examiner considers saving the image and the location of the image to be a system of tracking features of the specimen. Greenwald teaches the microscope assembly can autonomously scan an area after having the area specified by the user. Greenwald lacks reference to a non-human adaptive neural network. Hemstreet teaches the use of a non-human adaptive neural network to control the machine vision of a microscope (col. 37 lines 30-68). In the discussion of neural networks Hemstreet states that the neural network can use adaptive signal processing. The examiner interprets a neural network using adaptive neural processing as an adaptive neural network. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the Greenwald invention include the non-human adaptive neural network of Hemstreet for the purpose of performing the scanning type functions of the microscope autonomously to allow the human user to perform another task to increase overall work efficiency.

Regarding claims 3, 12 and 20, Greenwald teaches the camera has charge-coupled devices comprising its head and which are operatively connected to the computer by an image acquisition board (col. 6 lines 2-5).

Regarding claims 4, 13 and 22, Greenwald teaches the operating programs further comprise routines for controlling the robotics system, which, in turn, controls positioning of the video microscope, which, in turn, controls the positioning of the camera (Fig. 1; col. 6 lines 1-14).

Regarding claims 5, 14 and 23, Greenwald teaches the operating programs further comprise algorithms which operatively cooperative with the routines for scanning, identifying, detecting and tracking selected characteristics and features of the specimen (col. 5 lines 9-11; col. 6 lines 5-10). The storage of images and locations in the memory would require the use of algorithms.

Regarding claims 7, 16 and 21, Greenwald teaches the robotic system provides three-dimensional positioning of the video microscope, which, in turn, provides three-dimensional positioning of the specimen held in the holder (Fig. 2).

Regarding claims 8 and 17, Greenwald teaches the robotic system comprising a platform (12) for holding and orienting the video microscope (Figs. 1 and 2).

Regarding claim 9, Greenwald teaches the computer comprises a display terminal (60; Fig. 1).

Claims 2, 11 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greenwald (US 6,330,106) in view of Hemstreet (US 5,733,721) as applied to claims 1, 10 and 18 further in view of Knebel (US 6,388,807).

Greenwald in combination with Hemstreet teaches the invention as claimed but lacks reference to a fiber optic light source. Greenwald teaches the use of a laser light source in a confocal scanning microscope. Knebel teaches the use of an optical fiber associated with a laser light source for use in a confocal scanning microscope (col. 3 lines 1-5). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the Greenwald combined with Hemstreet invention include a fiber optic light source as taught by

Art Unit: 2872

Knebel for the purpose of expanding the functionality of the Greenwald microscope to include multiple light sources having different wavelengths.

Claims 24-26 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greenwald (US 6,330,106) in view of Hemstreet (US 5,733,721) as applied to claim 18 further in view of Abdel-Fattah (US 2004/0218798).

Greenwald in combination with Hemstreet teaches the invention as claimed but lacks reference to the use of colloid hard spheres. Abdel-Fattah teaches placing a colloid hard sphere specimen having a solid/liquid interface in the holder (abstract), causing the video microscope to generate an electronic image of the colloid specimen (Fig. 8), examining the electronic image to determine the origin size of pixels representing particles (para. 0088), examining the frame of the electronic image to determine if the solid/liquid interface has horizontal or vertical crystal growth (para. 0192), generating a series of frames of the electronic images (Fig. 8), performing averaging of the frames to visually separate solid and liquid portions of the electronic image (abstract), examining the electronic image to identify the solid and liquid portions of the specimen (Fig. 8) and storing the data in a data base associated with the colloid specimen (Fig. 8). Abdel-Fattah lacks specific reference to the use of dilation and threshold algorithms, however Abdel-Fattah does teach that calculations are performed on the saved electronic images (Fig. 8). The type of calculations performed would depend on the preference of the operator and one of ordinary skill in the art would readily recognize the need to perform both dilation and threshold calculations on the saved images. Greenwald further lacks reference to superimposing other data onto the saved image. It is extremely well known in the art to use superimposition to

Art Unit: 2872

display relevant data on an image of a video microscope for the purpose of quicker and easier viewing and evaluation of the observed image. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the Greenwald combined with Hemstreet invention include hard colloid spheres as a specimen and the associated calculations as taught by Abdel-Fattah for the purpose of determining the composition of an emulsion sample. It would also have been obvious to one of ordinary skill in the art at the time the invention was made to have the Greenwald invention include superimposition of calculated data onto the observed image as is known in the art for the purpose of easy evaluation of the observed image.

### *Response to Arguments*


Applicant's arguments, see Amendment, filed September 1, 2005, with respect to the rejection(s) of claim(s) 1 under Greenwald in view of Ferguson have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Greenwald in view of Hemstreet. Applicant argued that Ferguson lacked reference to a non-human adaptive neural network. The Hemstreet reference has been added to teach the adaptive neural network.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joshua L. Pritchett whose telephone number is 571-272-2318. The examiner can normally be reached on Monday - Friday 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew A. Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JLP 

  
**DREW A. DUNN**  
**SUPERVISORY PATENT EXAMINER**